

CLAIMS

1. An electronic service manual generation method, for
permitting a computer to generate an electronic service
5 manual that includes document information and drawing
information related to a predetermined product that
includes an electric circuit, or an electronic circuit,
that employs parts as components, comprising:
an original data acquisition step of the computer
10 obtaining original data serving as contents of the
electronic service manual;
a structure definition acquisition step of the
computer obtaining structure definition information, in
which a structure definition for the electronic service
15 manual is described and which is stored at a location
the computer is capable of referencing; and
a structured data generation step of, based on the
structure definition information obtained at the
structure definition acquisition step, the computer
20 employing the original data obtained at the original
data acquisition step to generate structured data that
is constituent data of the electronic service manual and
that conforms to the structure definition.
- 25 2. The electronic service manual generation method

according to claim 1,

whereby, when, at the original data acquisition
step, data that serves as main text for the electronic
service manual is obtained as the original data at the
5 structure definition acquisition step, main text
structure definition information in which a structure
definition related to the main text is described is
obtained as the structure definition information;

whereby, when, at the original data acquisition
10 step, drawing data in which parts used for the
predetermined product are illustrated are obtained as
the original data, at the structure definition
acquisition step, drawing structure definition
information in which a structure definition related to
15 the drawing is described is obtained as the structure
definition information;

whereby, when, at the original data acquisition
step, parts table data in which a list of the parts used
for the predetermined product is described are obtained
20 as the original data, at the structure definition
acquisition step, parts table structure definition
information, in which a structure definition related to
the parts table is described, is obtained as the
structure definition information; and

25 whereby, when, at the original data acquisition

step, voltage value table data, in which a list of voltage values for the electric circuit or the electronic circuit used in the predetermined product is described, are obtained as the original data, at the structure definition acquisition step, voltage value table structure definition information, in which a structure definition related to the voltage value table is described, is obtained as the structure definition information.

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3. The electronic service manual generation method according to claim 1,

whereby, when, at the original data acquisition step, data that serves as main text for the electronic service manual is obtained as the original data at the structure definition acquisition step, main text structure definition information in which a structure definition related to the main text is described is obtained as the structure definition information;

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whereby, when, at the original data acquisition step, drawing data in which parts used for the predetermined product are illustrated are obtained as the original data, at the structure definition acquisition step, drawing structure definition information in which a structure definition related to

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the drawing is described is obtained as the structure definition information;

whereby, when, at the original data acquisition step, parts table data in which a list of the parts used
5 for the predetermined product is described are obtained as the original data, at the structure definition acquisition step, parts table structure definition information, in which a structure definition related to the parts table is described, is obtained as the
10 structure definition information;

whereby, when, at the original data acquisition step, IC function table data in which a list of functions of ICs employed for the predetermined product is described are obtained as the original data, at the
15 structure definition acquisition step, IC function table structure definition information, in which a structure definition related to the IC function table is described, is obtained as the structure definition information; and

whereby, when, at the original data acquisition
20 step, voltage value table data, in which a list of voltage values for the electric circuit or the electronic circuit used in the predetermined product is described, are obtained as the original data, at the structure definition acquisition step, voltage value
25 table structure definition information, in which a

structure definition related to the voltage value table is described, is obtained as the structure definition information.

5 4. The electronic service manual generation method according to claim 1,

 whereby, when document data is obtained as the original data at the original data acquisition step, at the structured data generation step, the structured data,
10 in an XML format, is generated by using the document data; and

 whereby, when drawing data is obtained as the original data at the original data acquisition step, at the structured data generation step, the structured data
15 are generated in an SVG format or an SVGZ format by using the drawing data.

5. The electronic service manual generation method according to claim 1, comprising:

20 a parts-drawing correlation reference step, when at the original data acquisition step parts table data, in which a list of the parts used for the predetermined product is described, and parts drawing data that includes drawings related to the parts are obtained as
25 the original data, of the computer comparing individual

parts included in the list of the parts with the drawings wherein the individual parts are illustrated, and generating parts-drawing correlation information that includes the comparison results; and

5 a parts-drawing correlation addition step of, based on the parts-drawings correlation information generated at the parts-drawings correlation reference step, the computer embedding, in the parts table data, information about the parts written in the parts table data and the
10 drawings that correspond to the parts.

6. The electronic service manual generation method according to claim 1, comprising:

 a parts-IC correlation reference step, when at the
15 original data acquisition step parts table data, in which the list of the parts is written, and IC function table data, in which a list of functions of ICs employed for the predetermined product is written, are obtained as the original data, of the computer comparing
20 individual parts included in the parts list with the functions of individual ICs in the list of the IC functions and generating parts-IC functions correlation information that includes the comparison results; and

 a parts-IC correlation addition step, of, based on
25 the parts-IC functions correlation information generated

at the parts-IC correlation reference step, the computer embedding, in the parts table data, information about the parts written in the parts table data and about the IC functions that correspond to the parts.

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7. An additional data generation method, for a computer that displays, on a display unit, an electronic service manual that includes document information and drawing information related to a predetermined product that includes an electric circuit or an electronic circuit that employs parts as components, whereby, when a user who browses the electronic service manual displayed on the display unit enters, into the computer, additional information related to the electronic service manual, the computer generates additional data based on the additional information, comprising:

a structure definition acquisition step of the computer obtaining structure definition information, in which a structure definition related to the additional information entered by the user is described and which is stored at a location the computer is capable of referencing; and

a structured data generation step of, based on the structure definition information obtained at the structure definition acquisition step, the computer

employing the additional information to generate structured data that conforms to the structure definition.

5 8. The additional data generation method according to claim 7,

 whereby, when a comment by the user is entered into the computer the additional information, at the structure definition acquisition step, my-note structure
10 definition information, in which a structure definition related to the comment is described, is obtained as the structure definition information; and

 whereby, when display setup change information for a graphics primitive included in a drawing for the
15 electronic service manual is entered into the computer as the additional information, at the structure definition acquisition step, my-drawing structure definition information, in which a structure definition related to the display setup change information is
20 described, is obtained as the structure definition information.

 9. An electronic service manual generation program, for permitting a computer to generate an electronic
25 service manual that includes document information and

drawing information related to a predetermined product that includes an electric circuit, or an electronic circuit, that employs parts as components, and for permitting the computer to execute:

5 an original data acquisition step of obtaining original data serving as contents of the electronic service manual;

 a structure definition acquisition step of obtaining structure definition information, in which a
10 structure definition for the electronic service manual is described and which is stored at a location the computer is capable of referencing; and

 a structured data generation step of, based on the structure definition information obtained at the
15 structure definition acquisition step, employing the original data obtained at the original data acquisition step to generate structured data that is constituent data of the electronic service manual and that conforms to the structure definition.

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10. The electronic service manual generation program according to claim 9,

 whereby, when, at the original data acquisition step, data that serves as main text for the electronic
25 service manual is obtained as the original data at the

structure definition acquisition step, main text
structure definition information in which a structure
definition related to the main text is described is
obtained as the structure definition information;

5 whereby, when, at the original data acquisition
step, drawing data in which parts used for the
predetermined product are illustrated are obtained as
the original data, at the structure definition
acquisition step, drawing structure definition
10 information in which a structure definition related to
the drawing is described is obtained as the structure
definition information;

 whereby, when, at the original data acquisition
step, parts table data in which a list of the parts used
15 for the predetermined product is described are obtained
as the original data, at the structure definition
acquisition step, parts table structure definition
information, in which a structure definition related to
the parts table is described, is obtained as the
20 structure definition information; and

 whereby, when, at the original data acquisition
step, voltage value table data, in which a list of
voltage values for the electric circuit or the
electronic circuit used in the predetermined product is
25 described, are obtained as the original data, at the

structure definition acquisition step, voltage value
table structure definition information, in which a
structure definition related to the voltage value table
is described, is obtained as the structure definition
5 information.

11. The electronic service manual generation program
according to claim 9,
whereby, when, at the original data acquisition
10 step, data that serves as main text for the electronic
service manual is obtained as the original data at the
structure definition acquisition step, main text
structure definition information in which a structure
definition related to the main text is described is
15 obtained as the structure definition information;

whereby, when, at the original data acquisition
step, drawing data in which parts used for the
predetermined product are illustrated are obtained as
the original data, at the structure definition
20 acquisition step, drawing structure definition
information in which a structure definition related to
the drawing is described is obtained as the structure
definition information;

whereby, when, at the original data acquisition
25 step, parts table data in which a list of the parts used

for the predetermined product is described are obtained
as the original data, at the structure definition
acquisition step, parts table structure definition
information, in which a structure definition related to
5 the parts table is described, is obtained as the
structure definition information;

whereby, when, at the original data acquisition
step, IC function table data in which a list of
functions of ICs employed for the predetermined product
10 is described are obtained as the original data, at the
structure definition acquisition step, IC function table
structure definition information, in which a structure
definition related to the IC function table is described,
is obtained as the structure definition information; and

15 whereby, when, at the original data acquisition
step, voltage value table data, in which a list of
voltage values for the electric circuit or the
electronic circuit used in the predetermined product is
described, are obtained as the original data, at the
20 structure definition acquisition step, voltage value
table structure definition information, in which a
structure definition related to the voltage value table
is described, is obtained as the structure definition
information.

12. The electronic service manual generation program according to claim 9,

whereby, when document data is obtained as the original data at the original data acquisition step, at the structured data generation step, the structured data, in an XML format, is generated by using the document data; and

whereby, when drawing data is obtained as the original data at the original data acquisition step, at the structured data generation step, the structured data are generated in an SVG format or an SVGZ format by using the drawing data.

13. The electronic service manual generation program according to claim 9, for permitting the computer to execute:

a parts-drawing correlation reference step, when at the original data acquisition step parts table data, in which a list of the parts used for the predetermined product is described, and parts drawing data that includes drawings related to the parts are obtained as the original data, of comparing individual parts included in the list of the parts with the drawings wherein the individual parts are illustrated, and generating parts-drawing correlation information that

includes the comparison results; and

5 a parts-drawing correlation addition step, based on the parts-drawings correlation information generated at the parts-drawings correlation reference step, of embedding, in the parts table data, information about the parts written in the parts table data and the drawings that correspond to the parts.

14. The electronic service manual generation program
10 according to claim 9, for permitting the computer to execute:

a parts-IC correlation reference step, when at the original data acquisition step parts table data, in which the list of the parts is written, and IC function
15 table data, in which a list of functions of ICs employed for the predetermined product is written, are obtained as the original data, of comparing individual parts included in the parts list with the functions of individual ICs in the list of the IC functions and
20 generating parts-IC functions correlation information that includes the comparison results; and

a parts-IC correlation addition step, based on the parts-IC functions correlation information generated at the parts-IC correlation reference step, of embedding,
25 in the parts table data, information about the parts

written in the parts table data and about the IC functions that correspond to the parts.

15. An additional data generation program, which can be
5 executed by a computer that displays, on a display unit,
an electronic service manual that includes document
information and drawing information related to a
predetermined product that includes an electric circuit
or an electronic circuit that employs parts as
10 components, which permits the computer to generate
additional data based on additional information when a
user who browses the electronic service manual displayed
on the display unit enters, into the computer, the
additional information related to the electronic service
15 manual, and which permits the computer to execute:

a structure definition acquisition step of
obtaining structure definition information, in which a
structure definition related to the additional
information entered by the user is described and which
20 is stored at a location the computer is capable of
referencing; and

a structured data generation step of, based on the
structure definition information obtained at the
structure definition acquisition step, employing the
25 additional information to generate structured data that

conforms to the structure definition.

16. The additional data generation program according to claim 15,

5 whereby, when a comment by the user is entered into the computer the additional information, at the structure definition acquisition step, my-notes structure definition information, in which a structure definition related to the comment is described, is
10 obtained as the structure definition information; and
 whereby, when display setup change information for a graphics primitive included in a drawing for the electronic service manual is entered into the computer as the additional information, at the structure
15 definition acquisition step, my-drawings structure definition information, in which a structure definition related to the display setup change information is described, is obtained as the structure definition information.

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17. An electronic service manual generation apparatus, for generating an electronic service manual that includes document information and drawing information related to a predetermined product that includes an
25 electric circuit, or an electronic circuit, that employs

parts as components, comprising:

original data acquisition means, for obtaining original data serving as contents of the electronic service manual;

5 structure definition acquisition means, for obtaining structure definition information, in which a structure definition for the electronic service manual is described and which is stored at a location that is capable of being referenced; and

10 structured data generation means for, based on the structure definition information obtained by the structure definition acquisition means, employing the original data obtained by the original data acquisition means to generate structured data that is constituent
15 data of the electronic service manual and that conforms to the structure definition.

18. The electronic service manual generation apparatus according to claim 17,

20 wherein, when the original data acquisition means obtains, as the original data, data that serves as main text for the electronic service manual, the structure definition acquisition means obtains, as the structure definition information, main text structure definition
25 information in which a structure definition related to

the main text is described;

wherein, when the original data acquisition means obtains, as the original data, drawing data in which parts used for the predetermined product are illustrated,
5 the structure definition acquisition means obtains, as the structure definition information, drawing structure definition information in which a structure definition related to the drawing is described;

wherein, when the original data acquisition means
10 obtains, as the original data, parts table data in which a list of the parts used for the predetermined product is described, the structure definition acquisition means obtains, as the structure definition information, parts table structure definition information, in which a
15 structure definition related to the parts table is described; and

wherein, when the original data acquisition means obtains, as the original data, voltage value table data, in which a list of voltage values for the electric
20 circuit or the electronic circuit used in the predetermined product is described, the structure definition acquisition means obtains, as the structure definition information, voltage value table structure definition information, in which a structure definition
25 related to the voltage value table is described.

19. The electronic service manual generation apparatus according to claim 17,

wherein, when the original data acquisition means
5 obtains, as the original data, data that serves as main text for the electronic service manual, the structure definition acquisition means obtains, as the structure definition information, main text structure definition information in which a structure definition related to
10 the main text is described;

wherein, when the original data acquisition means obtains, as the original data, drawing data in which parts used for the predetermined product are illustrated, the structure definition acquisition means obtains, as
15 the structure definition information, drawing structure definition information in which a structure definition related to the drawing is described;

wherein, when the original data acquisition means obtains, as the original data, parts table data in which
20 a list of the parts used for the predetermined product is described, the structure definition acquisition means obtains, as the structure definition information, parts table structure definition information, in which a structure definition related to the parts table is
25 described;

wherein, when the original data acquisition means obtains, as the original data, IC function table data in which a list of functions of ICs employed for the predetermined product is described, the structure
5 definition acquisition means obtains, as the structure definition information, IC function table structure definition information, in which a structure definition related to the IC function table is described; and

wherein, when the original data acquisition means
10 obtains, as the original data, voltage value table data, in which a list of voltage values for the electric circuit or the electronic circuit used in the predetermined product is described, the structure definition acquisition means obtains, as the structure
15 definition information, voltage value table structure definition information, in which a structure definition related to the voltage value table is described.

20. The electronic service manual generation apparatus
20 according to claim 17,

wherein, when document data is obtained as the original data by the original data acquisition means, the structured data generation means generates the structured data, in an XML format, by using the document
25 data; and

wherein, when drawing data is obtained as the original data by the original data acquisition means, the structured data generation means generates the structured data, in an SVG format or an SVGZ format, by
5 using the drawing data.

21. The electronic service manual generation apparatus according to claim 17, comprising:

parts-drawing correlation reference means for, when
10 the original data acquisition means obtains, as the original data, parts table data, in which a list of the parts used for the predetermined product is described, and parts drawing data that includes drawings related to the parts, comparing individual parts included in the
15 list of the parts with the drawings wherein the individual parts are illustrated, and for generating parts-drawing correlation information that includes the comparison results; and

parts-drawing correlation addition means for, based
20 on the parts-drawings correlation information generated at the parts-drawings correlation reference step, embedding, in the parts table data, information about the parts written in the parts table data and the drawings that correspond to the parts.

22. The electronic service manual generation apparatus according to claim 17, comprising:

parts-IC correlation reference means for, when the original data acquisition means obtains, as the original data, parts table data, in which the list of the parts is written, and IC function table data, in which a list of functions of ICs employed for the predetermined product is written, comparing individual parts included in the parts list with the functions of individual ICs in the list of the IC functions, and for generating parts-IC functions correlation information that includes the comparison results; and

parts-IC correlation addition means for, based on the parts-IC functions correlation information generated by the parts-IC correlation reference means, embedding, in the parts table data, information about the parts written in the parts table data and about the IC functions that correspond to the parts.

23. An additional data generation apparatus, for displaying, on a display unit, an electronic service manual that includes document information and drawing information related to a predetermined product that includes an electric circuit or an electronic circuit that employs parts as components, and for generating

additional data based on additional information when a user who browses the electronic service manual displayed on the display unit enters, into the computer, the additional information related to the electronic service manual, comprising:

structure definition acquisition means, for obtaining structure definition information, in which a structure definition related to the additional information entered by the user is described and which is stored at a location that is capable of being referenced; and

structured data generation means for, based on the structure definition information obtained at the structure definition acquisition step, employing the additional information to generate structured data that conforms to the structure definition.

24. The additional data generation apparatus according to claim 23,

wherein, when a comment by the user is entered into the computer the additional information, the structure definition acquisition means obtains, as the structure definition information, my-notes structure definition information, in which a structure definition related to the comment is described; and

wherein, when display setup change information for a graphics primitive included in a drawing for the electronic service manual is entered into the computer as the additional information, the structure definition acquisition means obtains, as the structure definition information, my-drawings structure definition information, in which a structure definition related to the display setup change information is described.

25. A recording medium on which recorded is an electronic service manual generation program, for permitting a computer to generate an electronic service manual that includes document information and drawing information related to a predetermined product that includes an electric circuit, or an electronic circuit, that employs parts as components, and for permitting the computer to execute:

an original data acquisition step of obtaining original data serving as contents of the electronic service manual;

a structure definition acquisition step of obtaining structure definition information, in which a structure definition for the electronic service manual is described and which is stored at a location the computer is capable of referencing; and

a structured data generation step of, based on the structure definition information obtained at the structure definition acquisition step, employing the original data obtained at the original data acquisition
5 step to generate structured data that is constituent data of the electronic service manual and that conforms to the structure definition.

26. The recording medium on which recorded is an
10 electronic service manual generation program according to claim 25,

whereby, when, at the original data acquisition step, data that serves as main text for the electronic service manual is obtained as the original data at the
15 structure definition acquisition step, main text structure definition information in which a structure definition related to the main text is described is obtained as the structure definition information;

whereby, when, at the original data acquisition
20 step, drawing data in which parts used for the predetermined product are illustrated are obtained as the original data, at the structure definition acquisition step, drawing structure definition information in which a structure definition related to
25 the drawing is described is obtained as the structure

definition information;

whereby, when, at the original data acquisition step, parts table data in which a list of the parts used for the predetermined product is described are obtained as the original data, at the structure definition acquisition step, parts table structure definition information, in which a structure definition related to the parts table is described, is obtained as the structure definition information; and

whereby, when, at the original data acquisition step, voltage value table data, in which a list of voltage values for the electric circuit or the electronic circuit used in the predetermined product is described, are obtained as the original data, at the structure definition acquisition step, voltage value table structure definition information, in which a structure definition related to the voltage value table is described, is obtained as the structure definition information.

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27. The recording medium on which recorded is an electronic service manual generation program according to claim 25,

whereby, when, at the original data acquisition step, data that serves as main text for the electronic

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service manual is obtained as the original data at the structure definition acquisition step, main text structure definition information in which a structure definition related to the main text is described is
5 obtained as the structure definition information;

whereby, when, at the original data acquisition step, drawing data in which parts used for the predetermined product are illustrated are obtained as the original data, at the structure definition
10 acquisition step, drawing structure definition information in which a structure definition related to the drawing is described is obtained as the structure definition information;

whereby, when, at the original data acquisition
15 step, parts table data in which a list of the parts used for the predetermined product is described are obtained as the original data, at the structure definition acquisition step, parts table structure definition information, in which a structure definition related to
20 the parts table is described, is obtained as the structure definition information;

whereby, when, at the original data acquisition step, IC function table data in which a list of functions of ICs employed for the predetermined product
25 is described are obtained as the original data, at the

structure definition acquisition step, IC function table structure definition information, in which a structure definition related to the IC function table is described, is obtained as the structure definition information; and

5 whereby, when, at the original data acquisition step, voltage value table data, in which a list of voltage values for the electric circuit or the electronic circuit used in the predetermined product is described, are obtained as the original data, at the structure definition acquisition step, voltage value
10 table structure definition information, in which a structure definition related to the voltage value table is described, is obtained as the structure definition information.

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28. The recording medium on which recorded is an electronic service manual generation program according to claim 25,

 whereby, when document data is obtained as the
20 original data at the original data acquisition step, at the structured data generation step, the structured data, in an XML format, is generated by using the document data; and

 whereby, when drawing data is obtained as the
25 original data at the original data acquisition step, at

the structured data generation step, the structured data are generated in an SVG format or an SVGZ format by using the drawing data.

5 29. The recording medium on which recorded is an electronic service manual generation program according to claim 25 that permits the computer to execute:

10 a parts-drawing correlation reference step, when at the original data acquisition step parts table data, in which a list of the parts used for the predetermined product is described, and parts drawing data that includes drawings related to the parts are obtained as the original data, of comparing individual parts included in the list of the parts with the drawings
15 wherein the individual parts are illustrated, and generating parts-drawing correlation information that includes the comparison results; and

20 a parts-drawing correlation addition step, based on the parts-drawings correlation information generated at the parts-drawings correlation reference step, of embedding, in the parts table data, information about the parts written in the parts table data and the drawings that correspond to the parts.

25 30. The recording medium on which recorded is an

electronic service manual generation program according to claim 25 that permits the computer to execute:

5 a parts-IC correlation reference step, when at the original data acquisition step parts table data, in which the list of the parts is written, and IC function table data, in which a list of functions of ICs employed for the predetermined product is written, are obtained as the original data, of comparing individual parts included in the parts list with the functions of individual ICs in the list of the IC functions and
10 generating parts-IC functions correlation information that includes the comparison results; and

a parts-IC correlation addition step, based on the parts-IC functions correlation information generated at
15 the parts-IC correlation reference step, of embedding, in the parts table data, information about the parts written in the parts table data and about the IC functions that correspond to the parts.

20 31. A recording medium on which recorded is an additional data generation program, which can be executed by a computer that displays, on a display unit, an electronic service manual that includes document information and drawing information related to a
25 predetermined product that includes an electric circuit

or an electronic circuit that employs parts as components, which permits the computer to generate additional data based on additional information when a user who browses the electronic service manual displayed on the display unit enters, into the computer, the additional information related to the electronic service manual, and which permits the computer to execute:

a structure definition acquisition step of obtaining structure definition information, in which a structure definition related to the additional information entered by the user is described and which is stored at a location the computer is capable of referencing; and

a structured data generation step of, based on the structure definition information obtained at the structure definition acquisition step, employing the additional information to generate structured data that conforms to the structure definition.

32. The recording medium on which recorded is an additional data generation program according to claim 31,

whereby, when a comment by the user is entered into the computer the additional information, at the structure definition acquisition step, my-notes structure definition information, in which a structure

definition related to the comment is described, is
obtained as the structure definition information; and
whereby, when display setup change information for
a graphics primitive included in a drawing for the
5 electronic service manual is entered into the computer
as the additional information, at the structure
definition acquisition step, my-drawings structure
definition information, in which a structure definition
related to the display setup change information is
10 described, is obtained as the structure definition
information.